

WHAT IS CLAIMED IS:

1. A stabilizer bar for an automotive vehicle, said bar comprising:
first and second torsion rods which are aligned;
a coupling including first and second coupling members attached to the first and
5 second torsion rods, respectively, such that the rods can rotate relative to each other about
the axis, the members defining a cavity and having formations which are exposed to the
cavity;
a rheological fluid in the cavity defined by the first and second coupling members,
whereby the fluid will resist rotation of the members relative to each, with the magnitude of
10 the resistance depending of the viscosity of the fluid; and
means for varying the viscosity of the rheological fluid in the cavity.
2. A stabilizer bar according to claim 1 wherein the first coupling member is rotor
and the second coupling member is a housing which surrounds the rotor; and wherein the
rotor and housing have a common axis.
- 15 3. A stabilizer bar according to claim 2 wherein the formations on the rotor are
vanes which project outwardly away from the axis and the formations on the housing are
vanes which project inwardly toward the axis and into spaces between the vanes on the
rotor.
4. A stabilizer according to claim 3 wherein the housing has a cylindrical wall
20 from which the vanes of the housing project.
5. A stabilizer bar according to claim 1 wherein the rheological fluid is responsive
to magnetic fields, and wherein the means for varying the viscosity of the rheological fluid is
an electric coil.

6. A stabilizer bar according to claim 5 wherein the housing includes a wall that surrounds the rotor; and wherein the coil surrounds the wall.
7. A stabilizer bar according to claim 1 wherein the first and second torsion rods are separate and rotate relative to each other.
- 5 8. A stabilizer bar according to claim 1 wherein the first and second torsion rods are unified; wherein the unified rods extend through the coupling; and wherein the first and second coupling members are attached to the unified torsion rod remote from the cavity containing the rheological fluid so that the unified rod can twist in the region between which it is attached to the coupling members.
- 10 9. In combination with a structural component of an automotive vehicle, which further includes left and right control arms pivoted on the vehicle about axes that extend generally longitudinally of the vehicle, wheel ends that are connected to the control arms remote from the axes about which the control arms pivot, a stabilizer bar for reducing roll of the structural component in turns, said bar comprising:
- 15 left and right sections, each having a torsion rod and a torque arm, the torsion rods of the two sections being aligned along an axis that extends transversely of the vehicle and being attached to the structural component such that the sections can rotate relative to the structural component about the axis, the torque arm of the left section extending from the torsion rod of the left section and remote from that torsion rod being attached to the left
- 20 control arm, the torque arm of the right section extending from the torsion rod of the right section and remote from that torsion rod being attached to the right control arm;
- a coupling located between the left and right sections and including a left coupling member attached to the torsion rod of the left section and a right coupling member attached

to the torsion rod of the right section, the left and right coupling members forming a cavity and having formations which are exposed to the cavity;

a magneto-rheological fluid in the cavity; and

an electrical coil that produces a magnetic field that passes through the cavity and
5 controls the viscosity of the rheological fluid.

10. The combination according to claim 9 wherein one of the coupling members is a rotor and the other coupling member is a housing that surrounds the rotor.

11. The combination according to claim 10 wherein the formations on the rotor are vanes which project outwardly away from the transverse axis.

10 12. The combination according to claim 11 wherein the formations on the housing are vanes which project inwardly toward the axis and into spaces between the vanes and the rotor.

13. The combination according to claim 10 wherein the formations on the housing are vanes which project inwardly toward the axis.

15 14. The combination according to claim 10 wherein the coil surrounds the housing.

15. The combination according to claim 14 wherein the housing has a generally cylindrical wall and the coil surrounds the cylindrical wall.

16. The combination according to claim 9 wherein the torsion rods of the left and
20 right sections are detached.

17. The combination according to claim 9 wherein the torsion rods of the left and right sections are unified and pass through the coupling; wherein the left coupling member includes a tubular extension which extends away from the cavity and receives the torsion

rod of the left section; wherein the right coupling member includes a tubular extension which extends away from the cavity and receives the torsion rod of the right section; wherein the tubular extensions of the left and right members are secured to the torsion rods of the left and right sections, respectively, remote from the cavity.

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